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Solid waste management is interdisciplinary. It incorporates, for example, the specialized efforts of engineers, planners, earth scientists, labor managers, economists, lawyers, and psychologists, as well as businessmen in a variety of service trades and industries. Each group has its own specialized and ever-expanding nomenclature. Not unexpectedly, therefore, confusion exists regarding certain terms in everyday use. There is need, then, for a glossary to standardize the concepts in frequent use. A publication is also needed for terms that are coming into use in the literature of solid waste management and may be less well known to government officials and members of the industries involved. This glossary represents an attempt to perform both services.

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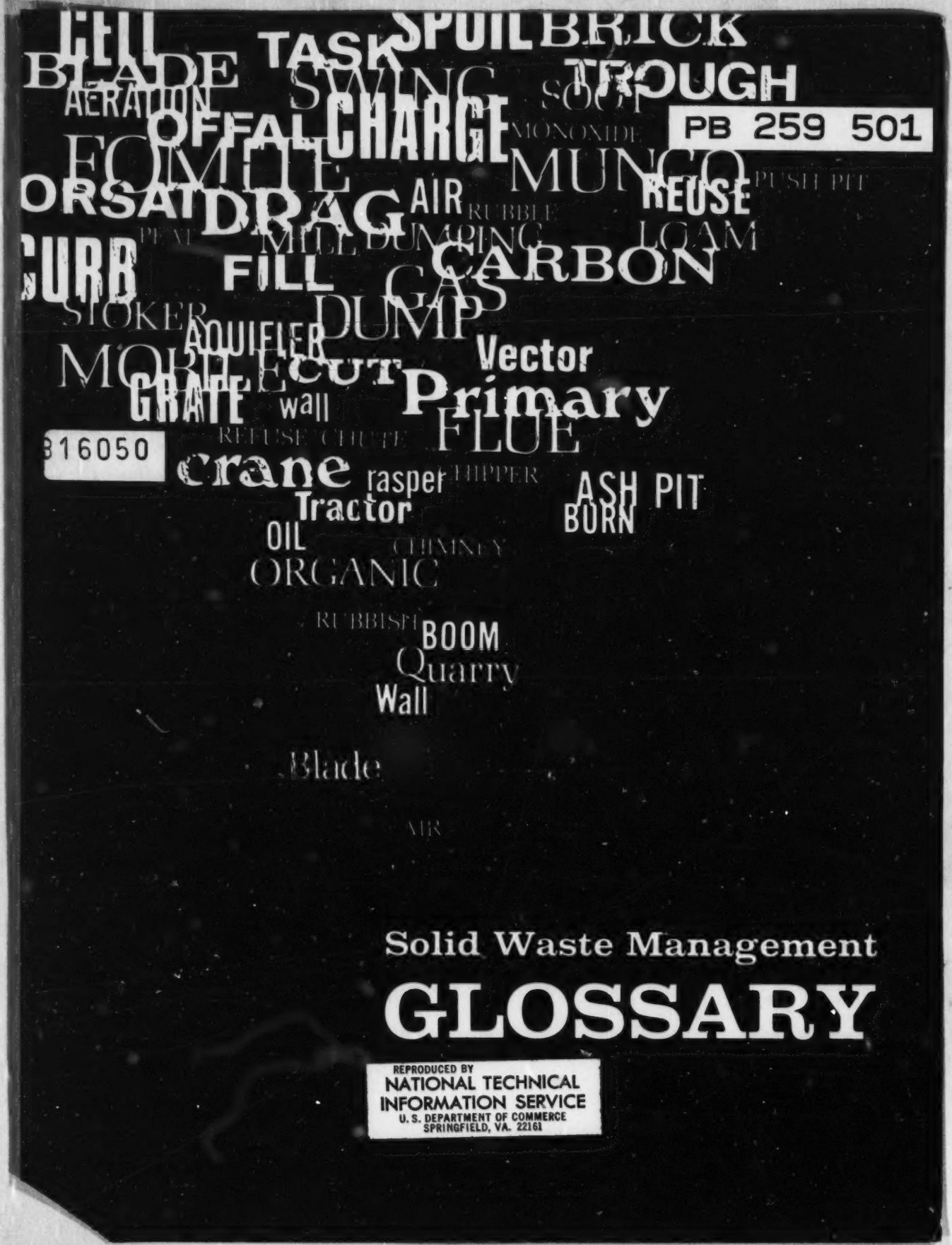

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Solid Waste Management

GLOSSARY

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Solid Waste Management

GLOSSARY

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FOREWORD

Solid waste management is interdisciplinary. It incorporates, for example, the specialized efforts of engineers, planners, earth scientists, labor managers, economists, lawyers, and psychologists, as well as businessmen in a variety of service trades and industries. Each group has its own specialized and ever-expanding nomenclature. Not unexpectedly, therefore, confusion exists regarding certain terms in everyday use. Perhaps the most common instance is the way community officials and others often refer to *dumps* when they mean *sanitary landfills* and vice versa. The blurring of the clearcut distinction between the two terms has been a serious problem in communicating to citizens the need for better solid waste disposal.

There is need, then, for a glossary to standardize the concepts in frequent use. This publication is also needed for terms that are coming into use in the literature of solid waste management and may be less well known to government officials and members of the industries involved. This glossary represents an attempt to perform both services.

Whenever possible, modifying terms are listed beneath the noun modified. The choice of terms to be defined and many of the definitions themselves have benefitted from the investigations and reports undertaken under the Solid Waste Disposal Act of 1965, as amended. In preparing training manuals, staff personnel of the Office of Solid Waste Management Programs concerned with this activity have of necessity developed standard sets of terms, and the present glossary has drawn from their work. The U.S. Environmental Protection Agency also gratefully acknowledges the contributions made by many individuals in the Federal solid waste management program, other Federal agencies, State and local governments, private industry, and universities. We will welcome suggestions from users for additional or better definitions that could be included in future editions of the glossary.

—SAMUEL HALE, JR.
Deputy Assistant Administrator
for Solid Waste Management

GLOSSARY

ABANDONED MOTOR VEHICLE·A motor vehicle that applicable State laws deem to have been abandoned.

ABRASION·Wearing away of surface material, such as refractories in an incinerator or parts of solid waste handling equipment, by the scouring action of moving solids, liquids, or gases.

ACTINOMYCETES·A large group of moldlike microorganisms which give off an odor characteristic of rich earth and are the significant organisms involved in the stabilization of solid wastes by composting.

AERATION·The process of exposing a bulk material, such as compost, to air, or of charging a liquid with a gas or a mixture of gases.

AEROBIC·Able to live and grow only if free oxygen is present.

AFTERBURNER·A device used to burn or oxidize the combustible constituents remaining in the effluent gases.

AGGREGATE·Crushed rock or gravel screened to sizes for use in road surfaces, concrete, or bituminous mixes.

AIR

Ambient·The surrounding air.

Combustion·Air used for burning a fuel.

Cooling·Ambient air that is added to hot combustion gases to cool them.

Excess Combustion·Air supplied in excess of theoretical air, usually expressed as a percentage of the theoretical air.

Primary Combustion·Air admitted to a combustion system at the point where the fuel is first oxidized.

Secondary Combustion·Air introduced above or beyond a fuel bed by a natural, induced, or forced draft. It is generally referred to as overfire air if supplied above the fuel bed through the side walls or the bridge wall of the primary chamber.

Theoretical·The amount of air, calculated from the chemical composition of a waste, that is required to completely burn the waste. Also referred to as stoichiometric air and theoretical combustion air.

AIR DEFICIENCY·A lack of air, in an air-fuel mixture, to supply the quantity of oxygen stoichiometrically required to completely oxidize the fuel.

AIR HEATER·A heat exchanger through which air passes and is heated by a medium of a higher temperature, such as hot combustion gases in metal tubes.

AIR JETS·Streams of high-velocity air that issue from nozzles in an incinerator enclosure to provide turbulence, combustion air, or a cooling effect.

AIR POLLUTANT·A substance that, when present in the atmosphere in large enough concentrations, adversely affects the environment.

AIR POLLUTION·An impaired condition of the atmosphere that results because certain substances present in it are too numerous or are of a noxious character.

AIR PREHEATER *See* **AIR HEATER**.

AIR QUALITY STANDARDS·Levels below which a specific substance or combination of substances must be kept in the atmosphere as established by legislation.

ALKALINITY·The measurable ability of solutions or aqueously suspended solids to neutralize an acid.

ANAEROBIC·Able to live and grow in the absence of free oxygen.

ANALYSIS

Proximate Analysis·Analysis of a solid fuel to determine (on a percentage basis) how much moisture, volatile matter, fixed carbon, and ash the sample contains; usually the fuel's heat value is also established.

Ultimate Analysis·The chemical analysis of a solid, liquid, or gaseous fuel. In the case of coal, coke, or solid waste, the amounts of carbon, hydrogen, sulfur, nitrogen, oxygen, and ash are determined.

ANGLE OF REPOSE·The maximum acute angle that the inclined surface of a pile of loosely divided material can make with the horizontal.

AQUIFER·An underground, water-bearing geologic formation.

ARCH

Drop·A form of construction that supports a vertical refractory furnace wall and serves to deflect gases downward.

Furnace·A nearly horizontal structure that extends into a furnace and serves to deflect gases.

Ignition·A refractory furnace arch or surface located over a fuel bed to radiate heat and to accelerate ignition.

ASH·The incombustible material that remains after a fuel or solid waste has been burned.

ASH-FREE BASIS·The method whereby the weight of ash in a fuel sample is subtracted from its total weight and the adjusted weight is used to calculate the percent of certain constituents present. For example, the percent of fixed carbon (F C) on an ash-free basis is computed as follows:

$$\frac{\text{F C (weight)} \times 100}{\text{Fuel Sample (weight)} - \text{Ash (weight)}} = \% \text{ ash-free F C}$$

ASH PIT·A pit or hopper located below a furnace where residue is accumulated and from which it is removed.

ASH SLUICE·A trench or channel in which water transports residue from an ash pit to a disposal or collection point.

AUTOMOBILE SHREDDER *See* **SHREDDER**.

AUXILIARY-FUEL FIRING EQUIPMENT·Equipment used in an incinerator to supply additional heat by burning an auxiliary fuel so that the resulting higher temperatures: (1) dry and ignite the waste material; (2) maintain ignition thereof; (3) effect complete combustion of combustible solids, vapors, and gases.

BACKFILL·The material used to refill a ditch or other excavation, or the process of doing so.

BACKHOE TAMPING·A processing step, often used in direct-dump transfer systems, in which a conventional backhoe is used to compact waste contained in an open-top transfer trailer.

BACTERIA·Single-cell, microscopic organisms, that possess rigid cell walls. They may be aerobic, anaerobic, or facultative; they can cause disease; and some are important in the stabilization of solid wastes.

BAFFLE·A construction intended to change the direction of fluid flow.

Water Cooled·A baffle composed essentially of closely spaced boiler tubes.

BAFFLE CHAMBER·A chamber following the combustion chamber, in which baffles change the direction of and/or reduce the velocity of the combustion gases in order to promote the settling of fly ash or coarse particulate matter.

BAGASSE·The fibrous residue that remains after juice is extracted from sugar cane or sugar beets.

BALER·A machine used to compress and bind solid waste or other materials.

BEARING CAPACITY·The maximum load that a material can support before failing.

BECCARI PROCESS·A composting process developed by Dr. Giovanni Beccari in 1922. Anaerobic fermentation is followed by a final stage in which decomposition proceeds under partially aerobic conditions; the process was later modified by Verdier and Bordas.

BEDDING, ANIMAL·Material, usually organic, that is placed on the floor of livestock quarters for animal comfort and to absorb excreta.

BIODEGRADABLE·The significant breaking down by microorganisms of the physical and/or chemical structure of a compound.

BLADE

Earth·A heavy, broad plate that is connected to the front of a tractor and is used to push and spread soil or other material.

Landfill·A U-blade with an extension on top that increases the volume of solid wastes that can be pushed and spread, and protects the operator from any debris thrown out of the solid waste.

U-Blade·A dozer blade with an extension on each side; they protrude forward at an obtuse angle to the blade and enable it to handle a larger volume of solid waste than a regular blade.

BLAST GATE·A sliding metal damper in a duct, usually used to regulate the flow of forced air.

BLOWER·A fan used to force air or gas under pressure.

BOOM·Any heavy beam that is hinged at one end and carries a weight-lifting device at the other.

BOOSTER CYCLE·The period during which additional hydraulic pressure is exerted to push the last charge of solid waste into a transfer trailer or a container attached to a stationary compactor.

BREECHING·A passage that conducts the products of combustion to a stack or chimney.

BREECHING BYPASS · An arrangement whereby breechings and dampers permit the intermittent use of two or more passages to direct or divert the flow of the products of combustion.

BRICK (FIREBRICK) · Refractory brick made from fireclay.

Alumina-Diaspore Fireclay · Brick consisting mainly of diaspore or nodule clay and having an alumina content of 50, 60, or 70 percent (plus or minus 2.5 percent).

High-Duty Fireclay · A fireclay brick that has a pyrometric cone equivalent (PCE) not lower than Cone 31-23, or does not deform more than 1.5 percent at 2,460 F (1,350 C) in the standard local test.

Insulating · A firebrick having a low thermal conductivity and a bulk density of less than 70 pounds per cubic foot; suitable for lining industrial furnaces. Also called insulating block.

Intermediate-Duty Fireclay · A fireclay brick that has a PCE above Cone 29 or does not deform more than 3 percent at 2,460 F (1,350 C) in the standard local test.

Super-Duty Fireclay · A fireclay brick that has a PCE above Cone 33 on the fired product, shrinks less than 1 percent in the American Society for Testing Materials permanent linear change test, Schedule C (2,910 F), and does not incur more than 4 percent loss in the panel spalling test (preheated to 3,000 F).

BRIQUETTER · A machine that compresses a material, such as metal turnings or coal dust, into small pellets.

BRITISH THERMAL UNIT (Btu) · The quantity of heat required to increase the temperature of one pound of water one degree Fahrenheit.

BUCKET · An open container affixed to the movable arms of a wheeled or tracked vehicle to spread solid waste and cover material, and to excavate soil.

BULL CLAM · A tracked vehicle that has a hinged, curved bowl on the top of the front of the blade.

BULLDOZER · A tracked vehicle equipped with an earth blade.

BURN (BRICK) · The degree of heat treatment to which refractory bricks are subjected when manufactured.

BURNER

Conical · A hollow, cone-shape combustion chamber that has an exhaust vent at its point and a door at its base through which waste materials are charged; air is delivered to the burning solid waste inside the cone. Also called a teepee burner.

Primary · A burner that dries out and ignites materials in the primary combustion chamber.

Refuse · A device for either central or on-site volume reduction of solid waste by burning; it is of simple construction and all the factors of combustion cannot be controlled.

Residential · A device used to burn the solid wastes generated in an individual dwelling.

Secondary · A burner installed in the secondary combustion chamber of an incinerator to maintain a minimum temperature and to complete the combustion of incompletely burned gases. Sometimes referred to as an afterburner.

BURNING AREA · The horizontal projection of a grate, a hearth, or both.

BURNING RATE · The quantity of solid waste incinerated or the amount of heat released during incineration. The rate is usually expressed in pounds of solid waste per square foot of burning area per hour or in Btu's per square foot of burning area per hour.

CABLE PULLOUT UNLOADING METHOD · A procedure in which a landfill tractor empties a transfer trailer by pulling a cable network from the front to the rear of the vehicle.

CAPACITY (INCINERATOR)

Design · The number of tons of solid waste that a designer anticipates his incinerator will be able to process in a 24-hour period if specified criteria are met.

Firm · The processing capacity of an incinerator when its largest independent unit is not operating.

Rated · The number of tons of solid waste that can be processed at an incinerator per 24-hour period when specified criteria prevail.

CAPILLARY WATER · Underground water that is held above the water table by capillary attraction.

CARBONACEOUS MATTER · Pure carbon or carbon compounds present in the fuel or residue of a combustion process.

CARBON DIOXIDE (CO_2) · A colorless, odorless, non-poisonous gas that forms carbonic acid when dissolved in water; it is produced during the thermal degradation and microbial decomposition of solid wastes.

CARBON DIOXIDE RECORDER·An instrument that continuously monitors the volume concentration (in percent) of carbon dioxide in a flue gas.

CARBON MONOXIDE (CO)·A colorless, poisonous gas that has an exceedingly faint metallic odor and taste. It is produced during the thermal degradation and microbial decomposition of solid wastes when the oxygen supply is limited.

CARBON NITROGEN RATIO (C/N)·The ratio of the weight of carbon to the weight of nitrogen present in a compost or in materials that are being composted.

CARRY-CLOTH·A large piece of canvas or burlap used to transfer solid waste from a residential solid waste storage area to a collection vehicle.

CATALYTIC COMBUSTION SYSTEM·A process in which a substance is introduced into an exhaust gas stream to burn or oxidize vaporized hydrocarbons or odorous contaminants; the substance itself remains intact.

CELL·Compacted solid wastes that are enclosed by natural soil or cover material in a sanitary landfill.

CELL HEIGHT·The vertical distance between the top and bottom of the compacted solid waste enclosed by natural soil or cover material in a sanitary landfill.

CELL THICKNESS·The perpendicular distance between the cover materials placed over the last working faces of two successive cells in a sanitary landfill.

CENTRAL GARBAGE GRINDER·A conveniently located facility that mechanically pulverizes food wastes collected from many sources in a community.

CHARGE·The quantity of solid waste introduced into a furnace at one time.

CHARGING CHUTE·An overhead passage through which waste materials drop into an incinerator.

CHARGING CUTOFF GATE·A modified charging gate used in continuous-feed furnaces that do not have high temperatures near the charging hopper. A sliding steel plate at the bottom of the charging hopper closes on a machined seat at the top of the charging chute.

CHARGING GATE·A horizontal, movable cover that closes the opening on a top-charging furnace.

CHARGING HOPPER·An enlarged opening at the top of a charging chute.

CHECKER WORK·A pattern of multiple openings in a refractory structure through which the products of combustion pass to accelerate the turbulent mixing of gases.

CHIMNEY *See* **STACK**.

CHIPPER·A size-reduction device having sharp blades attached to a rotating shaft (mandrel) that shave or chip off pieces of certain objects, such as tree branches or brush.

CLAMSHELL BUCKET·A vessel used to hoist and convey materials; it has two jaws that clamp together when the vessel is lifted by specially attached cables.

CLAY·A fine-grain soil having liquid limits and plasticity indexes that plot above the "A" line on the Unified Soil Classification System plasticity chart.

CLINKERS·Hard, sintered, or fused pieces of residue formed in a fire by the agglomeration of ash, metals, glass, and ceramics.

COLLECTION·The act of removing solid waste from the central storage point of a primary source.

Alley·The picking up of solid waste from containers placed adjacent to an alley.

Carryout·Crew collection of solid waste from an on-premise storage area using a carrying container, carry-cloth, or a mechanical method.

Contract·The collection of solid waste carried out in accordance with a written agreement in which the rights and duties of the contractual parties are set forth.

Curb·Collection of solid waste from containers placed adjacent to a thoroughfare.

Franchise·Collection made by a private firm that is given exclusive right to collect for a fee paid by customers in a specific territory or from specific types of customers.

Municipal·The collection of solid waste by public employees and equipment under the supervision and direction of a municipal department or official.

Private·The collection of solid waste by individuals or companies from residential, commercial, or industrial premises; the arrangements for the service are made directly between the owner or occupier of the premises and the collector.

Setout/Setback The removal of full and the return of empty containers between the on-

premise storage point and the curb by a collection crew.

COLLECTION FREQUENCY·The number of times collection is provided in a given period of time.

COLLECTION METHOD

Daily Route·A method in which each collection crew is assigned a weekly route that is divided into daily routes.

Definite Working Day·A variation of the large-route method in which definite routes are laid out and a crew assigned to each. Collection proceeds along a route for the length of time adopted for a working day. The next day, collection begins where the crew stopped the day before. This procedure continues until the whole route is covered, whereupon the crew returns to the beginning of the route.

Group Task·A method in which the responsibility for collecting on assigned routes is shared by more than one crew. Any crew that finishes a particular route works on another until all are completed.

Inter-Route Relief·A method in which regular crews help collect on other routes when they finish their own.

Large Route·A method in which each crew is assigned a weekly route. The crew works each day without a fixed stopping point or work time, but it completes the route within the working week.

Reservoir Route·A method in which several crews are used to pick up on a centrally located route after having collected on peripheral routes.

Single Load·A variation of the daily route method in which areas or routes are laid out that normally provide a full load of solid waste. Each crew usually has at least two such routes for a day's work. The crew quits for the day when the assigned number of routes is completed.

Swing Crew·A method in which one or more reserve work crews go anywhere help is needed.

Variable-Size Crew·A method in which a variable number of collectors is provided for individual crews, depending on the amount and conditions of work on particular routes.

COLLECTION STOP·A stop made by a vehicle and crew to collect solid waste from one or more service sites.

COLLECTOR (INCINERATOR)

Bag-Type·A filter in which the filtering medium is a fabric cylindrical bag.

Cyclone·A collector in which an inlet gas stream is made to move vortically; its centrifugal forces tend to drive suspended particles to the wall of the cyclone.

Dust·Any device used to remove dust from exhaust gases.

Fly Ash·Equipment used to remove fly ash from combustion gases.

Mechanical·A device in which inertial and gravitational forces separate dry dust from gas.

Multicyclone·A dust collector consisting of a number of cyclone collectors that operate in parallel; the volume and velocity of combustion gas can be regulated by dampers to maintain efficiency over a given load range.

COMBUSTION·The chemical combining of oxygen with a substance that results in the production of heat and usually light.

COMBUSTION CHAMBER

Primary·The chamber in an incinerator where waste is ignited and burned.

Secondary·The chamber of an incinerator where combustible solids, vapors, and gases from the primary chamber are burned and fly ash is settled.

COMBUSTION GASES·The mixture of gases and vapors produced by combustion.

COMBUSTION RATE *See* **BURNING RATE**.

COMPACTION PIT TRANSFER SYSTEM·A transfer system in which solid waste is compacted in a storage pit by a crawler tractor before being pushed into an open-top transfer trailer.

COMPACTOR

Mobile·A vehicle with an enclosed body containing mechanical devices that convey solid waste into the main compartment of the body and compress it.

Sanitary Landfill·A vehicle equipped with a blade and with rubber tires sheathed in steel or hollow steel cores; both types of wheels are equipped with load concentrations to provide compaction and a crushing effect.

Stationary·A machine that reduces the volume of solid waste by forcing it into a container.

COMPOST·Relatively stable decomposed organic material.

COMPOSTING • A controlled process of degrading organic matter by microorganisms.

Mechanical • A method in which the compost is continuously and mechanically mixed and aerated.

Ventilated Cell•A composting method in which the compost is mixed and aerated by being dropped through a vertical series of ventilated cells.

Windrow•An open-air method in which compostable material is placed in windrows, piles, or ventilated bins or pits and is occasionally turned or mixed. The process may be anaerobic or aerobic.

CONTAINER

Carrying•A receptacle of 35 to 50 gallons capacity, usually constructed of plastic or aluminum, that is carried by a collector in a backyard carryout service; frequently called a tote barrel.

Disposable • Plastic or paper sacks designed for storing solid waste.

Lift and Carry•A large container that can be lifted onto a service vehicle and transported to a disposal site for emptying; also called a detachable container or drop-off box.

Roll-on/Roll-off • A large container (20 to 40 cubic yards) that can be pulled onto a service vehicle mechanically and carried to a disposal site for emptying.

CONTAINER TRAIN•Small trailers, hitched in series that are pulled by a motor vehicle; they are utilized to collect and transport solid waste.

CONVERSION *See* **REPROCESSING.**

CONVEYOR

Apron•One or more continuous chains that are supported and moved by a system of sprockets and rollers; they carry overlapping or interlocking plates that move bulk materials on their upper surface.

Drag•A conveyor that uses vertical steel plates fastened between two continuous chains to drag material across a smooth surface.

Flight • A drag conveyor that has rollers interspersed in its pull chains to reduce friction.

Inclined Plate•A separating device that operates by feeding material onto an inclined steel plate belt conveyor so that heavy and resilient materials, such as glass, bounce down the conveyor, and light and inelastic materials are carried upward by the motion of the belt.

Residue•A conveyor, usually a drag- or flight-type, used to remove incinerator residue from a quench trough to a discharge point.

Screw•A rotating helical shaft that moves material, such as incinerator siftings, along a trough or tube.

COOLING SPRAYS•Water sprays directed into flue gases to cool them and, in most cases, to remove some fly ash.

CORROSION•The alteration of a material by chemical action.

COST PER TON PER MINUTE • A unit that is often used in cost comparisons between transfer and direct-haul operations.

COVER MATERIAL • Soil that is used to cover compacted solid waste in a sanitary landfill.

CRANE

Bridge•A lifting unit that can maneuver horizontally in two directions.

Monorail•A lifting unit, suspended from a single rail, that can move in one horizontal direction.

CULLET•Clean, color-sorted, crushed glass that is used in glassmaking to speed up the melting of silica sand.

CUT•Portion of a land surface or an area from which earth or rock has been or will be excavated. The distance between an original ground surface and an excavated surface.

CUT AND COVER (CUT AND FILL)•An infrequently and incorrectly used term referring to the trench method of sanitary landfilling.

CUT-OFF TRENCH • A trench that is filled with material that is impermeable or very permeable to the flow of gas or water. The barrier is used to prevent the movement of gas or water or to intercept them and to direct them to another location. *See* **GAS BARRIER.**

DAMPER • A manually or automatically controlled valve or plate in a breeching, duct, or stack, that is used to regulate a draft or the rate of flow of air or other gases.

Barometric•A hinged or pivoted plate that automatically regulates the amount of air entering a duct, breeching, flue connection, or stack; it thereby maintains a constant draft in the incinerator.

Butterfly • A plate or blade installed in a duct, breeching, flue connection, or stack that rotates on an axis to regulate the flow of gases.

Guillotine•An adjustable plate, utilized to regulate

the flow of gases, installed vertically in a breeching.

Sliding·A plate normally installed perpendicularly to the flow of gas in a breeching and arranged to slide across it to regulate the flow.

DANO BIOSTABILIZER SYSTEM·An aerobic, thermophilic composting process in which optimum conditions of moisture, air, and temperature are maintained in a single, slowly revolving cylinder that retains the compostable solid waste for one to five days. The material is later windrowed.

DEAD ANIMALS·Animals that have died from any cause except those slaughtered or killed for human use.

DECOMPOSTION·The reduction of the net energy level and change in chemical composition of organic matter, as by microorganisms.

DEGLASSER *See* **OSBORNE SEPARATOR.**

DEMOLITION WASTE *See* **WASTE, Construction and Demolition.**

DENSITY

Sanitary Landfill·The ratio of the combined weight of solid waste and the soil cover to the combined volume of the solid waste and the soil cover. $(W_{SW} + W_{soil}/V_{SW} + V_{soil})$

Solid Waste·The number obtained by dividing the weight of solid waste by its volume.

DESTRUCTIVE DISTILLATION·The airless heating of organic matter that results in the evolution of volatile substances and produces a solid char consisting of fixed carbon and ash. *See* **LANTZ PROCESS.**

DIRECT-DUMP TRANSFER SYSTEM·The unloading of solid waste directly from a collection vehicle into an open-top transfer trailer or container.

DISPERSION·The dilution or removal of a substance by diffusion, turbulence, etc. Technically, a two-phase system involving two substances, the first of which is uniformly distributed in a finely divided state through the second (the dispersion medium).

DISPOSAL

Ocean·The deposition of waste into an ocean or estuarine body of water.

On-Site·The utilization of methods or processes to eliminate or reduce the volume or weight of solid waste on the property of the generator.

Waste·The orderly process of discarding useless or unwanted material.

DOWNPASS·A chamber or gas passage placed between two combustion chambers to carry the products of combustion downward.

DRAFT·The difference between the pressure in an incinerator, or any component part, and that in the atmosphere; it causes air or the products of combustion to flow from the incinerator to the atmosphere.

Forced·The positive pressure created by the action of a fan or blower, which supplies the primary or secondary combustion air in an incinerator.

Induced·The negative pressure created by the action of a fan, blower, or ejector located between an incinerator and a stack.

Natural·The negative pressure created by the height of a stack or chimney and the difference in temperature between flue gases and the atmosphere.

DRAFT CONTROLLER·An automatic device that maintains a uniform furnace draft by regulating a damper.

DRAGLINE·A revolving shovel that carries a bucket attached only by cables and digs by pulling the bucket toward itself.

DRAG PLATE·A plate beneath a traveling or chain-grate stoker used to support the returning grates.

DRUM MILL·A long, inclined steel drum that rotates and grinds solid wastes in its rough interior; smaller ground material falls through holes near the end of the drum and larger material drops out of the end. The drum mill is used in some composting operations.

DULONG'S FORMULA·A formula for calculating the approximate heating value of a solid fuel based on its ultimate analysis.

DUMP·A land site where solid waste is disposed of in a manner that does not protect the environment.

DUMPING·An indiscriminate method of disposing of solid waste. Meaning the unloading or emptying of a container: use *discharging*.

DUMP PLATE·A hinged plate in an incinerator that supports residue and from which residue may be discharged by rotating the plate.

DUST·Fine-grain particulate matter that is capable of being suspended in air.

DUST LOADING·The amount of dust in a gas; usually expressed in grains per cubic foot or pounds per thousand pounds of gas.

ECOLOGY·The science that deals with the interrelationships of organisms and their living and nonliving surroundings.

ECOSYSTEM·The interdependence of organisms and their surroundings.

EFFLUENT·The substances that flow out of a designated source.

EFFLUENT SEEPAGE·Diffuse discharge onto the ground of liquids that have percolated through solid waste or another medium; they contain dissolved or suspended materials.

ELECTROSTATIC PRECIPITATOR·A device that collects particulates by placing an electrical charge on them and attracting them onto a collecting electrode.

ELUTRIATION·Separation of solid waste into heavy and light fractions by washing.

EMISSIONS·Material that is released into the air either by a discrete source (primary emission) or as the result of a photochemical reaction or chain of reactions (secondary emission).

EMISSION STANDARD·A rule or measurement established to regulate or control the amount of a given pollutant that may be discharged into the outdoor atmosphere from its source.

ENGINE SIDESCREEN·A rugged screen that fits on the engine housing of a vehicle used at a sanitary landfill to keep paper and other objects from accumulating and damaging the engine.

ENVIRONMENT·The conditions, circumstances, and influences surrounding and affecting the development of an organism or group of organisms.

ENVIRONMENTAL SYSTEM·The interraction of an organism or group of organisms with its natural and manmade surroundings.

EROSION

Accelerated·Erosion of soil material at a faster than natural rate. Accelerated erosion occurs when vegetal cover is destroyed or is affected by some activity of man.

Refractory·The wearing away of refractory surfaces by the washing action of moving liquids, such as molten slags or metals, or the action of moving gases.

EVASE STACK·An expanding connection on the outlet of a fan or in an air flow passage; its purpose is to convert kinetic energy into static pressure.

EXPANSION

Permanent Expansion·The ability of some refractories to increase in size permanently at temperatures within their useful range. Also known as secondary expansion.

EXPANSION CHAMBER *See* **SETTLING CHAMBER.**

EXPANSION JOINT

Refractory·An open joint left open so that refractories can expand thermally or permanently. Also, small spaces or gaps built into a refractory structure to permit sections of masonry to expand and contract freely and to prevent the distortion or buckling of furnace structures under excessive expansion stresses. These joints are built in such a way that the masonry can move but that little or no air or gas can leak through it.

EXTRACTION *See* **RECOVERY.**

FACE *See* **WORKING FACE.**

FACULTATIVE·Able to live and grow with or without free oxygen.

FAIRFIELD-HARDY DIGESTER (COMPOSTING) A patented product of Fairfield Engineering Company, Marion, Ohio, which decomposes garbage, sewage sludge, industrial, and other organic wastes by a controlled continuous aerobic-thermophilic process.

FAN

Induced Draft·A fan that exhausts hot gases from heat-absorbing equipment, dust collectors, or scrubbers.

Overfire Air·A fan used to provide air above a fuel bed.

FIELD CAPACITY (OF SOLID WASTE) The amount of water retained in solid waste after it has been saturated and has drained freely. Also known as moisture-holding capacity.

FILL *See* **SANITARY LANDFILL.**

FILTER

Bag·A device containing one or more fabric bags for recovering particles from the dust laden gas or air.

Fabric·A device designed to remove particles from

a carrier gas by passage of the gas through a porous (fabric) medium.

FIRECLAY·A sedimentary clay containing only small amounts of fluxing impurities. It is high in hydrous aluminum silicates and is, therefore, capable of withstanding high temperatures.

FIXED CARBON·The ash-free carbonaceous material that remains after volatile matter is driven off during the proximate analysis of a dry solid waste sample.

FLAREBACK·A burst of flame from a furnace in a direction opposed to the normal gas flow; it usually occurs when accumulated combustible gases ignite.

FLUE·Any passage designed to carry combustion gases and entrained particulates.

FLUE DUST·Solid particles (smaller than 100 microns) carried in the products of combustion.

FLUE GAS·Waste gas from a combustion process.

FLUE GAS SCRUBBER OR WASHER·A type of equipment that removes fly ash and other objectionable materials from flue gas by the use of sprays, wet baffles, or other means that require water as the primary separation mechanism.

FLUIDIZED BED TECHNIQUE·A combustion process in which heat is transferred from finely divided particles, such as sand, to combustible materials in a combustion chamber. The materials are supported and fluidized by a column of moving air.

FLUXING·Dissolving or melting of a substance by chemical action.

FLY ASH·All solids, including ash, charred paper, cinders, dust, soot, or other partially incinerated matter, that are carried in a gas stream.

FOMITE·An inanimate object that can harbor or transmit pathogenic organisms.

FOOD PROCESSING WASTE·Waste resulting from operations that alter the form or composition of agriculture products for marketing purposes.

FOOD WASTE·Animal and vegetable waste resulting from the handling, storage, sale, preparation, cooking, and serving of foods; commonly called garbage.

FOULING·The impedance to the flow of gas or heat that results when material accumulates in gas passages or on heat absorbing surfaces in an incinerator.

FRONT END LOADER·A collection vehicle with arms that engage a detachable container, move it up over the cab, empty it into the vehicle's body, and return it to the ground.

FUEL BED·The layer of solid fuel or solid waste on a furnace grate or hearth.

FUME·Suspended particles in a gas; one micron or less in diameter.

FUNGI·Simple plants that lack a photosynthetic pigment. The individual cells have a nucleus surrounded by a membrane, and they may be linked together in long filaments called hyphae, which may grow together to form a visible body. Simpler fungi are involved in the stabilization of solid waste and sewage.

FURNACE·The chambers of an incinerator where drying, ignition, and combustion occur.

FURNACE VOLUME·The total internal volume of combustion chambers.

FUSION POINT·The temperature at which a particular complex mixture of minerals can flow under the weight of its own mass. Because most refractory materials have no definite fusion points but soften gradually over a range of temperatures, the conditions of measurement have been standardized by the ASTM. *See* **PYROMETRIC CONE EQUIVALENT**.

GARBAGE *See* **FOOD WASTE**.

GARCHEY SYSTEM·A patented system in which residential waste is temporarily stored in a water-filled flushing device mounted under a sink; it is conveyed through tubes to a central holding tank.

GAS BARRIER·Any device or material used to divert the flow of gases produced in a sanitary landfill or by other land disposal techniques. *See* **CUT-OFF TRENCH**.

GASIFICATION·The process of converting a solid or liquid fuel into a gaseous fuel.

GAS WASHER OR SCRUBBER *See* **FLUE GAS SCRUBBER**.

GENERATION·The act or process of producing solid waste.

GRADER·A gas- or diesel-powered, pneumatic-wheeled machine equipped with a centrally located blade that can be angled to cast to either side.

GRADIENT·The degree of slope or a rate of change.

GRAPPLE·A clamshell-type bucket having three or more jaws; also called a star or orange peel bucket.

GRATE·A device used to support the solid fuel or solid waste in a furnace during drying, ignition, or combustion. Openings in it permit air to pass through it.

Fixed·A grate that has no moving parts; called a stationary grate. A stationary grate through which no air passes is called a dead plate.

Movable·A grate with moving parts. A movable grate designed to feed solid fuel or solid waste to a furnace is called a stoker. *See* **STOKER**.

GRAVEL·Rock fragments from 2 mm to 64 mm (.08 to 2.5 inches) in diameter; gravel mixed with sand, cobbles, boulders, and containing no more than 15 percent of fines.

GRAVITY WALL·A furnace wall supported directly by the foundation or floor of a structure.

GRINDING·The mechanical pulverization of solid waste.

GROUNDWATER·Water present in the saturated zone of an aquifer.

Free·Groundwater in aquifers that are not bounded by or confined in impervious strata.

GROUNDWATER RUNOFF·That part of the groundwater that is discharged into a stream channel as spring or seepage water.

GROUSER·A ridge or cleat that extends across a crawler tractor track to improve its traction.

GROUT·A cementing or sealing mixture of cement and water to which sand, sawdust, or other fillers may be added.

HAMMERMILL·A broad category of high-speed equipment that uses pivoted or fixed hammers or cutters to crush, grind, chip, or shred solid wastes.

HARDPAN·A hardened, compacted, or cemented soil layer.

HAUL DISTANCE

1. The distance a collection vehicle travels from its last pickup stop to the solid waste transfer station, processing facility, or sanitary landfill.
2. The distance a vehicle travels from a solid waste transfer station or processing facility to a point of final disposal.
3. The distance that cover material must be transported from an excavation or stockpile to the working face of a sanitary landfill.

HAUL TIME·The elapsed or cumulative time spent transporting solid waste between two specific locations.

HEARTH

Burning·A solid surface to support the solid fuel or solid waste in a furnace during drying, ignition, or combustion, without air openings in it. The surface upon which material is placed for combustion.

Cold Drying·A surface upon which unheated waste material is placed to dry or burn; hot combustion gases are then passed over the material.

Drying·A solid surface in an incinerator upon which wet waste materials or liquids or waste matter that may turn to liquid before burning are placed to dry or burn with the help of hot combustion gases.

Hot Drying·A surface upon which waste material is placed to dry or burn; hot combustion gases first pass over the wastes and then under the hearth.

HEAT

Available·The quantity of useful heat produced per unit of fuel if it is completely burned; the heat values of the dry flue-gas and water vapor are deducted.

HEAT BALANCE·An accounting of the distribution of the heat input and output of an incinerator, usually on an hourly basis.

HEAT EXCHANGER·A device that transfers heat from one fluid to another without allowing them to mix.

HEAT OF COMBUSTION·The heat released, measured in Btu's, when a unit quantity of waste or fuel is burned.

HEAT RELEASE RATE·The amount of heat liberated during complete combustion; it is usually expressed in Btu's per hour per cubic foot of the internal volume of the furnace where the combustion takes place.

HEAT VALUE

High·The Btu's liberated when a pound of solid waste is burned completely and the products of combustion are cooled to the initial temperature of the solid waste, as in a calorimeter.

Low·The high heat value minus the latent heat of vaporization of the water that is formed by burning the hydrogen in the fuel.

HEAVY MEDIA SEPARATION·Separation of solid

wastes into heavy and light fractions in a fluid medium whose density lies between theirs.

HOG FEEDING·The utilization of heat-treated food wastes as a livestock feed.

HOUSEHOLD SOLID WASTE *See* **SOLID WASTE, Residential.**

HUMUS·Decomposed organic material.

HYDRAULIC SCOOPER·A self-propelled crawler vehicle equipped with hydraulically operated arms that lift, empty, and replace containers carried on a transfer trailer bed.

HYDRAULIC TIPPER·A device that unloads a transfer trailer by raising its front end to a 70 degree angle.

HYDROGEN SULFIDE (H_2S)·A poisonous gas with the odor of rotten eggs that is produced from the reduction of sulfates in and the putrefaction of a sulfur-containing organic material.

HYDROLOGY·Science dealing with the properties, distribution, and flow of water on or in the earth.

IGNITION TEMPERATURE·Lowest temperature of a fuel at which combustion becomes self-sustaining.

IMPACT MILL·A machine that grinds material by throwing it against heavy metal projections rigidly attached to a rapidly rotating shaft.

IMPERVIOUS·Resistant to penetration by fluids or gases.

INCINERATION·The controlled process by which solid, liquid, or gaseous combustible wastes are burned and changed into gases and the residue produced contains little or no combustible material.

INCINERATOR·An engineered apparatus used to burn waste substances and in which all the factors of combustion—temperature, retention time, turbulence, and combustion air—can be controlled.

- **Batch Fed**·An incinerator that is periodically charged with solid waste; one charge is allowed to burn down or burn out before another is added.
- **Cell-type**·An incinerator whose grate areas are divided into cells, each of which has its own ash drop, underfire air control, and ash grate.
- **Central**·A conveniently located facility that burns solid waste collected from many different sources.
- **Chute Fed**·An incinerator that is charged through a chute that extends two or more floors above it.
- **Continuous Feed**·An incinerator into which solid waste is charged almost continuously to maintain a steady rate of burning.
- **Controlled-Air**·An incinerator with two or more combustion areas in which the amounts and distribution of air are controlled. Partial combustion takes place in the first zone, and gases are burned in a subsequent zone or zones.
- **Direct Fed**·An incinerator that accepts solid waste directly into its combustion chamber.
- **Flue Fed**·An incinerator that is charged through a shaft that functions as a chute for charging waste and has a flue to carry the products of combustion.
- **Industrial**·An incinerator designed to burn a particular industrial waste.
- **Multiple Chamber**·An incinerator consisting of two or more chambers, arranged as in-line or retort types, interconnected by gas passage ports or ducts.
- **Municipal**·A privately or publicly owned incinerator primarily designed and used to burn residential and commercial solid wastes.
- **On-Site**·An incinerator that burns solid waste on the property utilized by the generator thereof.
- **Open Pit**·A burning device that has an open top and a system of closely spaced nozzles that place a stream of high-velocity air over the burning zone.
- **Retort-type**·A multiple-chamber incinerator in which the gases travel from the end of the ignition chamber, then pass through the mixing and combustion chamber.

INCINERATOR GAS *See* **FLUE GAS.**

INDORE PROCESS·An anaerobic composting method that originated in India; it is similar to the Bangalore process and was modified by Van Maanen. Organic wastes are placed in alternate layers with human or animal excreta in a pit or pile. The piles are turned twice in six months and drainage is used to keep the compost moist.

INFILTRATION·The process whereby some precipitation flows through the surface of the ground.

INFILTRATION AIR·Air that leaks into the chambers or ducts of an incinerator.

INOCULUM·Microorganisms placed in a culture medium, soil, compost, etc.

INTERFLOW · That portion of precipitation that infiltrates into the soil and moves laterally under its surface until intercepted by a stream channel or until it resurfaces down slope from its point of infiltration.

INTERMITTENT STREAM · A channel in which water sometimes flows.

INTERNAL COMPACTION TRANSFER SYSTEM · A transfer method in which the reciprocating action of a hydraulically powered bulkhead contained within an enclosed trailer packs solid waste against the rear doors.

JUNK · Unprocessed materials suitable for reuse or recycling.

K-FACTOR · The thermal conductivity of a material, expressed as Btu per sq ft per hour in degrees Fahrenheit and inches. *See* **THERMAL CONDUCTIVITY.**

KNIFE HOG *See* **CHIPPER.**

LANTZ PROCESS · A destructive distillation technique, in which the combustible components of solid waste are converted into combustible gases, charcoal, and a variety of distillates.

LEACHATE · Liquid that has percolated through solid waste or other medium and has extracted dissolved or suspended materials from it.

LEDGE PLATE · A plate that is adjacent to or overlaps the edge of a stoker.

LIFT · In a sanitary landfill, a compacted layer of solid wastes and the top layer of cover material.

LINING · The material used on the inside of a furnace wall; usually of high-grade refractory tiles or bricks or a plastic refractory material.

LITTER · Wantonly discarded material.

LOAD-BEARING RESISTANCE (REFRACTORY) The degree to which a refractory resists deformation when subjected to a specified compressive load at a specified temperature and time.

LOAM · A soft, easily worked soil containing sand, silt, and clay.

LYSIMETER · A device used to measure the quantity or rate of water movement through or from a block of soil or other material, such as solid waste, or used to collect percolated water for quality analysis.

MANURE · Primarily the excreta of animals; may contain some spilled feed or bedding.

MATERIAL BALANCE · An accounting of the weights of materials entering and leaving a processing unit, such as an incinerator, usually on an hourly basis.

MEMBRANE BARRIER · Thin layer of material impermeable to the flow of gas or water.

METALS · In the secondary materials industry, metals include all ferrous, nonferrous, and alloy materials.

METHANE (CH_4) · An odorless, colorless, and asphyxiating gas that can explode under certain circumstances; can be produced by solid waste undergoing anaerobic decomposition.

MICRON · A measure of dust-particle diameter equal to 1/1,000 of a millimeter (1/25,400 of an inch).

MICRON EFFICIENCY CURVE · A curve showing how well a collector traps micron-size particles.

MILLED REFUSE · Solid waste that has been mechanically reduced in size.

MIXING CHAMBER · A chamber usually placed between the primary and secondary combustion chambers of an incinerator; the products of combustion are thoroughly mixed there by turbulence that is created by increased velocities of gases, checker work, or turns in the direction of the gas flow.

MOISTURE CONTENT (SOLID WASTE) · The weight loss (expressed in percent) when a sample of solid waste is dried to a constant weight at a temperature of 100 C to 105 C.

MOISTURE HOLDING CAPACITY *See* **FIELD CAPACITY.**

MOISTURE PENETRATION · The depth to which irrigation water or rain penetrates soil before the rate of downward movement becomes negligible.

MONOLITHIC CONSTRUCTION *See* **MONOLITHIC LINING.**

MONOLITHIC LINING · A refractory lining or construction made in large sections on site; conventional layers and joints of brick construction are not used.

MORTAR

Air-Setting Refractory · A finely ground material that, when it dries, develops a strong bond between refractory materials, even when heated to working furnace temperatures. Also known as cold-setting refractory mortar.

Fireclay · A mortar made of high-fusion-point fireclay and water; it is often used to fill joints in

refractory walls to stop air or gas leaks without forming a strong bond.

Heat-Setting Refractory·A mortar in which the bond is developed by the application of relatively high temperatures, which vitrify part of its constituents. Also known as hot-setting refractory mortar.

Hydraulic Setting·A mortar that hardens or sets as a result of hydration, a chemical reaction with water. In an incinerator, the water in the mortar evaporates and a ceramic bond develops when the working furnace temperature is applied.

MUNGO·The waste of milled wool that is combined with other fibers to make low-quality cloth.

ODOR THRESHOLD·The lowest concentration of an airborne odor that a human can detect.

OFFAL·Intestines and discarded parts, including paunch manure, of slaughtered animals.

OPACITY RATING·The apparent obscuration of an observer's vision that equals the apparent obscuration of smoke of a given rating on the Ringelmann Chart.

OPEN BURNING·Uncontrolled burning of wastes in the open or in an open dump.

OPEN DUMP *See* **DUMP.**

ORGANIC CONTENT·Synonymous with volatile solids, except for small traces of some inorganic materials such as calcium carbonate, that lose weight at temperatures used in determining volatile solids.

ORGANISM·Any living thing.

Microorganism·Any living thing that is microscopic or submicroscopic in size.

ORSAT·An apparatus used to analyze flue gases volumetrically by measuring the amounts of carbon dioxide, oxygen, and carbon monoxide present.

OSBORNE SEPARATOR·A device that utilizes a pulsed, rising column of air to separate small particles of glass, metal, and other dense items from compost.

OVERFIRE AIR *See* **AIR, Secondary Combustion.**

PACKER *See* **COMPACTOR.**

PATHOGEN·An organism capable of producing disease.

PEAT·Partially decomposed organic material.

PEEP DOOR·A small door or hole in an incinerator, through which combustion can be observed.

PERCENT MOISTURE CONTENT (SOLID WASTE) The percent of moisture contained in solid waste; it can be calculated on a dry or wet basis.

$$1.\ \text{Wet} = \frac{100\ (\text{water content of sample})}{\text{Dry weight of sample \& water content of sample}}$$

$$2.\ \text{Dry} = \frac{100\ (\text{water content of sample})}{\text{Dry weight of sample}}$$

PERCOLATION·A qualitative term that refers to the downward movement of water through soil, solid waste, or other porous medium.

PERMEABILITY·The capacity of a porous medium to conduct or transmit fluids.

pH·Negative logarithm of the hydrogen ion concentration; a measure of acidity and alkalinity.

PICKING TABLE OR BELT·Table or belt on which solid waste is manually sorted and certain items are removed. It is normally used in composting and salvage operations.

PLASTIC INSULATION·An insulation that is plastic enough when mixed with water that it can adhere to outer furnace walls or be placed over furnace arches.

PNEUMATIC ASH HANDLING·A system of pipes and cyclone separators that conveys fly ash or floor dust to a bin via an air stream.

POLLUTION·The condition caused by the presence in the environment of substances of such character and in such quantities that the quality of the environment is impaired or rendered offensive to life.

POLYVINYL CHLORIDE (PVC)·A common plastic material that releases hydrochloric acid when burned.

POROSITY·Ratio of the volume in any porous material that is not filled with solid matter to the total volume occupied.

PROCESSING·Any method, system, or other treatment designed to change the physical form or chemical content of solid waste.

PRODUCTS OF COMBUSTION·The gases, vapors, and solids that result from the combustion of a fuel.

PSI·Pressure in pounds of force per square inch.

PULVERIZATION·The crushing or grinding of material into small pieces.

PUSH PIT·A storage system sometimes used in stationary compactor transfer systems. A hydraulically powered bulkhead that traverses the length of the pit periodically pushes the stored waste into the hopper of a compactor.

PUTREFACTION·The decomposition of organic matter by microorganisms and oxidation, resulting in odors.

PUTRESCIBLE·Organic matter capable of being decomposed by microorganisms.

PYROLYSIS·The chemical decomposition of a material by heat in the absence of oxygen.

PYROMETER·An instrument for measuring or recording temperatures.

Optical A temperature-measuring instrument that matches the intensity of radiation at a single wavelength from a tungsten filament with the intensity of the radiation at the same wavelength emitted by a heat source.

Radiation·A device that determines temperature by measuring the intensity of radiation at all wavelengths emitted by a material having a high temperature.

PYROMETRIC CONE EQUIVALENT (PCE)·An index to the refractoriness of a material; it is obtained by a test that provides the number of a standard pyrometric cone that is closest in its bending behavior to that of a pyrometric cone made of the material when both are heated in accordance with the ASTM Standard Method of Test for Pyrometric Cone Equivalent of Refractory Materials.

QUENCH TROUGH·A water-filled trough into which burning residue drops from an incinerator furnace.

RASPER·A grinding machine in the form of a large vertical drum containing heavy hinged arms that rotate horizontally over a rasp-and-sieve floor.

RATED LOAD·The maximum load that a crane is designed to handle safely.

RECLAMATION·The restoration to a better or more useful state, such as land reclamation by sanitary landfilling, or the obtaining of useful materials from solid waste.

RECOVERABLE RESOURCES·Materials that still have useful physical or chemical properties after serving a specific purpose and can, therefore, be reused or recycled for the same or other purposes.

RECOVERY·The process of obtaining materials or energy resources from solid waste. Synonyms: Extraction, Reclamation, Salvage.

Energy Energy available from the heat generated when solid wastes are incinerated.

RECYCLING·The process by which waste materials are transformed into new products in such a manner that the original products may lose their identity.

REFRACTORY·Nonmetallic substances used to line furnaces because they can endure high temperatures. In addition, they should normally be able to resist one or more of the following destructive influences: abrasion, pressure, chemical attack, and rapid changes in temperature.

Castable·A hydraulic-setting refractory, suitable for casting or being pneumatically formed into heat-resistant shapes or walls.

High Alumina·A refractory product containing 47.5 percent more alumina than regular refractories.

Plastic·A blend of ground fireclay materials in a plastic form, that is suitable for ramming into place to form monolithic linings or special shapes. It may be air-setting or heat-setting and is available in different qualities of heat resistance.

REFUSE *See* **SOLID WASTE**.

REFUSE CHUTE·A pipe, duct, or trough through which solid waste is conveyed pneumatically or by gravity to a central storage area.

REFUSE TRAIN *See* **CONTAINER TRAIN**.

REINJECTION·Reintroduction of fly ash into a furnace to burn out all the combustibles.

RENDERING·A process of recovering fatty substances from animal parts by heat treatment, extraction, and distillation.

REPROCESSING·The action of changing the condition of a secondary material.

RESIDUE·Material that remains after gases, liquids, or solids have been removed.

Incinerator Residue All of the solid material collected after an incineration process is completed.

REUSE·The reintroduction of a commodity into the economic stream without any change.

RINGELMANN CHART·Printed or photographically reproduced illustrations of four shades of gray, that an observer can use to estimate the density of

smoke emitted from an incinerator. A clear stack is recorded as 0, and 100 percent black smoke as 5. Number 1 has a 20 percent density, and 2 through 4 are progressively 20 percent more dense.

RIPARIAN RIGHTS·Rights of the landowner to water on or bordering his property; they include his right to prevent upstream water from being diverted or misused.

RUBBISH·A general term for solid waste–excluding food waste and ashes–taken from residences, commercial establishments, and institutions.

RUBBLE·Broken pieces of masonry and concrete.

RUNOFF·That portion of precipitation or irrigation water that drains from an area as surface flow.

SALVAGE·The utilization of waste materials.

SALVAGING·The controlled removal of waste materials for utilization.

SAND·A course-grained soil, the greater portion of which passes through a No. 4 sieve, according to the Unified Soil Classification System.

SANDY LOAM·A soft, easily worked soil containing 0 to 20 percent clay, 0 to 50 percent silt, and 43 to 85 percent sand, according to the U.S. Department of Agriculture classification code.

SANITARY LANDFILL·A site where solid waste is disposed using sanitary landfilling techniques.

SANITARY LANDFILLING·An engineered method of disposing of solid waste on land in a manner that protects the environment, by spreading the waste in thin layers, compacting it to the smallest practical volume, and covering it with soil by the end of each working day.

SANITARY LANDFILLING METHOD

Area·A method in which the wastes are spread and compacted on the surface of the ground and cover material is spread and compacted over them.

Quarry·A variation of the area method in which the wastes are spread and compacted in a depression; cover material is generally obtained elsewhere.

Ramp·Another variation of the area method in which a cover material is obtained by excavating in front of the working face. A variation of this method is known as the progressive slope sanitary landfilling method.

Trench·A method in which the waste is spread and compacted in a trench. The excavated spoil is spread and compacted over the waste to form the basic cell structure.

Wet Area·A method used in a swampy area where precautions are taken to avoid water pollution before proceeding with the area landfill technique.

SANITATION·The control of all the factors in man's physical environment that exercise or can exercise a deleterious effect on his physical development, health, and survival.

SATELLITE VEHICLE·A small collection vehicle that transfers its loads into a larger vehicle operating in conjunction with it.

SILT·A fine-grain soil having liquid limits and plasticity indexes that plot below the "A" line on the Unified Soil Classification System plasticity chart.

SCAVENGER·One who participates in the uncontrolled removal of materials at any point in the solid waste stream.

SCOOTER·A three-wheeled satellite vehicle equipped with a flatbed, dump box, or packer body.

SCRAP·Discarded or rejected material or parts of material that result from manufacturing or fabricating operations and are suitable for reprocessing.

Home·Scrap that never leaves the manufacturing plant and is reprocessed there. Also known as revert scrap.

Obsolete·Scrap that results when material becomes worn or otherwise unusable for its original purpose.

Prompt Industrial·Scrap that is left over from the fabrication of iron and steel products.

SCREEN

Rotary·An inclined, meshed cylinder that rotates on its axis and screens material placed in its upper end.

Vibrating·An inclined screen that is vibrated mechanically and screens material placed on it.

SCRUBBER *See* **FLUE GAS SCRUBBER OR WASHER.**

SECATOR·A separating device that throws mixed material onto a rotating shaft; heavy and resilient materials bounce off one side of the shaft, while light and inelastic materials land on the other and are cast in the opposite direction.

SECONDARY MATERIAL·A material that is utilized in place of a primary or raw material in manufacturing a product.

SEEPAGE·Movement of water or gas through soil without forming definite channels.

SEPARATION·The systematic division of solid waste into designated categories.

SEPARATION CHAMBER *See* **SETTLING CHAMBER.**

SEPARATOR

Ballistic·A device that drops mixed materials having different physical characteristics onto a high-speed rotary impeller; they are hurled off at different velocities and land in separate collecting bins.

Inertial·A material separation device that relies on ballistic or gravity separation of materials having different physical characteristics.

Magnetic·Any device that removes ferrous metals by means of magnets.

SERVICE SITE·A residential unit, commercial establishment, or other pick-up point that receives periodic solid waste collection service.

SETTLEMENT·A gradual subsidence of material.

Differential·The nonuniform subsidence of material from a fixed horizontal reference plane.

SETTLING CHAMBER·Any chamber designed to reduce the velocity of the products of combustion and thus to promote the settling of fly ash from the gas stream. *See* **BAFFLE CHAMBER.**

SETTLING VELOCITY·The velocity at which a given dust will fall out of dust-laden gas under the influence of gravity only.

SEWAGE SLUDGE·A semiliquid substance consisting of settled sewage solids combined with varying amounts of water and dissolved materials.

SEWAGE TREATMENT RESIDUES·Coarse screenings, grit, or sludge from wastewater treatment units.

SHALE·A soft rock formed of consolidated clay or silt.

SHEAR SHREDDER·A size reduction machine that cuts material between two large blades or between a blade and a stationary edge.

SHREDDER·A machine that reduces discarded automobiles and other low-grade sheet and coated metal in a continuous operation to fist-size pieces.

SIFTINGS·The fine materials that fall from a fuel bed through its grate openings during incineration.

SILICA (SiO_2)·The oxide of silicon, a major constituent of fireclay refractories, alone or in chemical combinations.

SILICON CARBIDE·A refractory material that has a high melting point, is very dense, and resists abrasion.

SILT·Mineral soil grains intermediate between clay and sand (0.05 to 0.002 mm in diameter). Waterborne sediment whose individual grains have diameters approaching those of silt. Soil material that contains at least 80 percent silt, less than 12 percent clay, and less than 20 percent sand.

SINTERING·A heat treatment that causes adjacent particles of a material to cohere below a temperature that would cause them to melt.

SLAG·A mineral substance formed by chemical action and fusion at furnace operating temperatures.

SLAGGING OF REFRACTORIES·Destructive chemical action that forms slag on refractories subjected to high temperatures. Also a molten or viscous coating produced on refractories by ash particles.

SLOPE·The deviation of a surface from the horizontal expressed as a percentage, by a ratio, or in degrees.

SLOPS *See* **SWILL.**

SLOUGH·Wet or marshy area.

SLUDGE·A semi-liquid sediment.

SMOKE·An aerosol consisting of all the dispersible particulates produced by the incomplete combustion of carbonaceous materials entrained in flue gas.

SMOKE ALARM·An instrument that continuously measures and records the density of smoke by determining how much light is obscured when a beam is shown through the smoke; an alarm fitted in a flue goes off when the smoke exceeds a preset density.

SMOKE DENSITY·The amount of solid matter contained in smoke; it is often measured by systems that relate the grayness of the smoke to an established standard.

SMOKE EYE·A device consisting of a light source and a photoelectric cell that measures the degree to which smoke in a flue gas obscures light.

SOIL·The unconsolidated natural surface material present above bedrock; it is either residual in origin

(formed by the in-place weathering of bedrock) or has been transported by wind, water, or gravity.

SOIL COHESION·The mutual attraction exerted on soil particles by molecular forces and moisture films.

SOIL PLASTICITY·The property of a soil that allows it to be deformed or molded in a moist condition without cracking or falling apart.

SOLID WASTE·Useless, unwanted, or discarded material with insufficient liquid content to be free flowing. *See also* **WASTE**.

Agricultural·The solid waste that results from the rearing and slaughtering of animals and the processing of animal products and orchard and field crops.

Commercial·Solid waste generated by stores, offices and other activities that do not actually turn out a product.

Industrial·Solid waste that results from industrial processes and manufacturing.

Institutional·Solid wastes originating from educational, health care, and research facilities.

Municipal·Normally, residential and commercial solid waste generated within a community.

Pesticide·The residue resulting from the manufacturing, handling, or use of chemicals for killing plant and animal pests.

Residential·All solid waste that normally originates in a residential environment. Sometimes called domestic solid waste.

SOLID WASTE FILL *See* **SANITARY LANDFILL**.

SOLID WASTE MANAGEMENT·The purposeful, systematic control of the generation, storage, collection, transport, separation, processing, recycling, recovery, and disposal of solid wastes.

SOOT·Agglomerations of tar-impregnated carbon particles that form when carbonaceous material does not undergo complete combustion.

SPALLING OF REFRACTORIES·The breaking or crushing of a refractory unit due to thermal, mechanical, or structural causes.

SPARK ARRESTER·A screen-like device that keeps sparks, embers, or other ignited materials above a given size within an incinerator.

SPOIL·Soil or rock that has been removed from its original location.

SPOTTER·In truck use, the man who directs a driver into a loading or unloading position.

SPRAY CHAMBER·A chamber equipped with water sprays that cool and clean incinerator combustion products passing through the chamber.

STACK·A vertical passage through which products of combustion are conducted to the atmosphere.

STACK EFFECT·The vertical movement of hot gases in a stack that results because they are hotter (lighter) than the atmosphere.

STACK SAMPLING·The collecting of representative samples of gaseous and particulate matter that flows through a duct or stack.

STERILIZATION·The destruction, by chemical or physical means, of a microorganism's ability to reproduce; to render something barren.

STOICHIOMETRIC AIR *See* **AIR, Theoretical.**

STOKER·A mechanical device to feed solid fuel or solid waste to a furnace.

Chain Grate·A stoker that has a moving chain as a grate surface; the grate consists of links mounted on rods to form a continuous surface that is generally driven by a shaft with sprockets.

Incinerator·A mechanically operable moving grate arrangement for supporting, burning, and transporting solid waste in a furnace and discharging the residue.

Inertial Grate·A stoker consisting of a fixed bed of plates that is carried on rollers and activated by an electrically driven mechanism; it draws the bed slowly back against a spring and then releases it so that the entire bed moves forward until stopped abruptly by another spring. The inertia of the solid waste carries it a small distance forward along the stoker surface, and then the cycle is repeated.

Oscillating Grate·A stoker of which the entire grate surface oscillates to move the solid waste and residue over the grate surface.

Reciprocating Grate·A stoker consisting of a bed of bars or plates arranged so that alternate pieces, or rows of pieces, reciprocate slowly in a horizontal sliding mode and act to push the solid waste along the stoker surface.

Rocking Grate·A stoker consisting of a bed of bars or plates on axles. When the axles are rocked in a coordinated manner, the solid waste is lifted and advanced along the surface of the grate.

Rotary Kiln·A cylindrical inclined device that rotates, thus causing the solid waste to move in a slow cascading and forward motion.

Traveling Grate·A stoker that is essentially a moving chain belt carried on sprockets and covered with separated small metal pieces called keys. The entire top surface can act as a grate while moving through the furnace but can flex over the sprocket wheels at the end of the furnace, return under the furnace, and reenter the furnace over sprocket wheels at the front.

STORAGE·The interim containment of solid waste, in an approved manner, after generation and prior to ultimate disposal.

STORAGE PIT·A pit in which solid waste is held prior to processing.

STREET REFUSE·Material picked up when streets and sidewalks are swept manually and mechanically.

SUBSIDENCE·Settling or sinking of the land surface due to many factors such as the decomposition of organic material, consolidation, drainage, and underground failures.

SUBSOIL·That part of the soil beneath the topsoil; usually does not have an appreciable organic matter content.

SULFUR OXIDES (SO_n)·Compounds of sulfur combined with oxygen that have a significant influence on air pollution.

SURFACE COMPACTION·Increasing the dry density of surface soil by applying a dynamic load.

SURFACE CRACKING·Discontinuities that develop in the cover material at a sanitary landfill due to the surface drying or settlement of the solid waste. (These discontinuities may result in the exposure of solid waste, entrance or egress of vectors, intrusion of water, and venting of decomposition gases.)

SURFACE DUMP *See* **DUMP.**

SWILL·Semiliquid waste material consisting of food scraps and free liquids.

TAILINGS·Second grade or waste material derived when raw material is screened or processed.

TEEPEE BURNER *See* **BURNER, Conical.**

TEMPERING AIR *See* **AIR, Cooling.**

TERMINAL VELOCITY *See* **SETTLING VELOCITY.**

THERMAL CONDUCTIVITY·The specific rate of heat flow per hour through refractories or other substance expressed in Btu per sq ft of area, for a temperature difference of one degree Fahrenheit, and for a thickness of one inch expressed as Btu per sq ft per hour in degrees Fahrenheit and inches.

THERMAL EFFICIENCY·The ratio of heat used to total heat generated.

THERMAL SHOCK RESISTANCE·The ability of a material to withstand sudden heating or cooling or both without cracking or spalling.

THERMOCOUPLE·Two lengths of wire, made from different kinds of homogeneous metals, that are connected to form a complete electric circuit; they develop an electromotive force when one junction is at a different temperature than the other.

TIDAL MARSH·Low flat marshlands traversed by interlaced channels and tidal sloughs and subject to tidal inundation; normally, the only vegetation present is salt-tolerant bushes and grasses.

TIPPING FLOOR·Unloading area for vehicles that are delivering solid waste to an incinerator or other processing plant.

TOE·The bottom of the working face at a sanitary landfill.

TOPSOIL·The topmost layer of soil; usually refers to soil that contains humus and is capable of supporting good plant growth.

TOPOGRAPHIC MAP·A map indicating surface elevations and slopes.

TOTAL COST BIDDING·A method of establishing the purchase price of movable equipment; the buyer is guaranteed that maintenance will not exceed a set maximum amount during a fixed period and that the equipment will be repurchased at a set minimum price when the period ends.

TOTE BARREL *See* **CONTAINER, Carrying.**

TRANSFER STATION·A site at which solid waste is concentrated and then taken to a processing facility or sanitary landfill.

TRANSPORT·The movement of solid waste subsequent to collection.

TRASH *See* **RUBBISH.**

TROMMEL *See* **SCREEN, Rotary.**

TUYERES·Openings or ports in a grate through which air can be directed to improve combustion.

UNDERFIRE AIR·Any forced or induced air, under control as to quantity and direction, that is supplied beneath a grate and passes through a fuel bed.

UNLOADING BULKHEAD·A steel plate that ejects waste out the rear doors of an enclosed transfer trailer. It is propelled by a telescoping, hydraulically powered cylinder that traverses the length of the trailer.

UTILITY (PRIVATE)·A private business that collects, processes, and disposes of solid waste under a government license or monopoly franchise.

VAPOR PLUME·Flue gas that is visible when it emerges from a stack because it contains condensed water droplets or mist.

VECTOR

Disease Vector·A carrier, usually an arthropod, that is capable of transmitting a pathogen from one organism to another.

VITRIFICATION·A process whereby high temperatures effect permanent chemical and physical changes in a ceramic body, most of which is transformed into glass.

VOLATILE MATTER·The material lost from a dry solid waste sample that is heated until it is red in a closed crucible.

VOLATILE SOLIDS·The material lost from a dry solid waste sample that is heated until it is red in an open crucible in a ventilated furnace. The weight of the volatile solids is equal to that of the volatile matter plus that of the fixed carbon.

WALL

Air Cooled·A refractory wall that has a lane directly behind it through which cool air flows.

Battery·A double or common wall between two incinerator combustion chambers; both faces are exposed to heat.

Bridge·A partition between chambers over which pass the products of combustion.

Core·In a battery wall, those center courses of brick, none of which are exposed on either side.

Curtain·A refractory construction or baffle that deflects combustion gases downward.

Insulated·A furnace wall on which refractory material is installed over insulation.

Refractory·A wall made of heat resistant material.

Sectionally-Supported·A furnace or boiler wall which consists of special refractory blocks or shapes that are mounted on and supported at intervals of height by metallic hangers.

Unit Suspended·A furnace wall or panel that is hung from a steel structure.

Water-Cooled·A furnace wall composed of boiler tubes.

WASTE *See also* **SOLID WASTE.**

Bulky Waste·Items whose large size precludes or complicates their handling by normal collection, processing, or disposal methods.

Construction and Demolition Waste·Building materials and rubble resulting from construction, remodeling, repair, and demolition operations.

Hazardous Waste·Those wastes that require special handling to avoid illness or injury to persons or damage to property.

Wood Pulp Waste·Wood or paper fiber residue resulting from a manufacturing process.

Special Waste·Those wastes that require extraordinary management.

Yard Waste·Plant clippings, prunings, and other discarded material from yards and gardens. Also known as yard rubbish.

WASTE PROCESSING·An operation such as shredding, compaction, composting, and incineration, in which the physical or chemical properties of wastes are changed.

WASTE SOURCES·Agricultural, residential, commercial, industrial activities that generate wastes.

WATERSHED·Total land area above a given point on a stream or waterway that contributes runoff to that point.

WATER TABLE·The upper limit of the part of the soil or underlying rock material that is wholly saturated with water.

Perched Water·A water table, usually of limited area, maintained above the normal free-water elevation by the presence of an intervening, relatively impervious stratum.

WET DIGESTION·A solid waste stabilization process in which mixed solid organic wastes are placed in an open digestion pond to decompose anaerobically.

WET LINE KIT·A system used in conjunction with an enclosed transfer trailer to power its unloading bulkhead. The bulkhead's hydraulic pump is driven by a power-take-off unit on the semitractor's transmission.

WET MILLING·The mechanical size reduction of solid wastes that have been wetted to soften the paper and cardboard constituents.

WET PULPING *See* **WET MILLING.**

WETTING AGENT·A chemical that reduces the surface tension of water and enables it to soak into porous material more readily.

WHITE GOODS·Discarded kitchen and other large, enameled appliances.

WINDBOX·A chamber below a furnace grate or surrounding a burner, through which air is supplied under pressure to burn the fuel.

WORKING FACE·That portion of a sanitary landfill where waste is discharged by collection trucks and is compacted prior to placement of cover material.

YARD TRACTOR·A small semi-tractor used exclusively for maneuvering transfer trailers into and out of loading position.

ZONE OF AERATION·The area above a water table where the interstices (pores) are not completely filled with water.

ZONE OF CAPILLARITY·The area above a water table where some or all of the interstices (pores) are filled with water that is held by capillarity. *See* **CAPILLARY WATER.**

BIBLIOGRAPHY

1. I.I.A. incinerator standards. New York, Incinerator Institute of America, May 1966. 31 p.
2. BUSINESS & DEFENSE SERVICES ADMINISTRATION. Iron & steel scrap consumption problems. Washington, U.S. Government Printing Office, Mar. 1966. 52 p.
3. SCHWARTZ, D. Lexicon of incinerator terminology. *In* Proceedings; 1964 National Incinerator Conference, New York, May 18-20, 1964. American Society of Mechanical Engineers. p. 20-31.
4. Elements of solid waste management. [Training course manual in solid wastes.] [Cincinnati], U.S. Department of Health, Education, and Welfare, Sept. 1968. [140 p.] [Restricted distribution.]
5. AMERICAN PUBLIC WORKS ASSOCIATION. Municipal refuse disposal. 3d ed. Chicago, Public Administration Service, 1970. 538 p.
6. USA standard for domestic gas-fired incinerators. New York, American Gas Association, 1967. 32 p.
7. HANKS, T.G. Solid waste/disease relationships, a literature survey. Public Health Service Publication No. 999-UIH-6. Washington, U.S. Government Printing Office, 1967. 179 p.
8. Glossary of boiler and electric utility terms; lexicon of American Boiler Manufacturers Association. *In* G.R. Fryling, *ed.* Combustion engineering. Rev. ed. New York, Combustion Engineering, Inc., 1967. p. B1-36.
9. Glossary of soil and water terms. Special Publication SP-04-67. St. Joseph, Michigan, American Society of Agricultural Engineers, Jan. 1967. 61 p.
10. Committee report–glossary of soil science terms. Soil Science Society of America Proceedings; 29(3):330-351, May-June, 1965.
11. NATIONAL AIR POLLUTION CONTROL ADMINISTRATION. Unpublished Glossary, 1969.
12. Terminology of forest service technology practice and products. Washington, Society of American Foresters, 1971. 349 p.
13. Proceedings, 1964 National Incinerator Conference, New York, May 18-20, 1964. American Society of Mechanical Engineers. 180 p.

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